A Price Setting Model For Aprofe

The Asociacion Pro Bienestar De La Familia Ecuatoriana (APROFE)
Guyaquil, Ecuador

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ABSTRACT

APROFE, the largest PVO reproductive health organization in Ecuador has a goal of increasing income generation while avoiding denial of access to the poorest clients. The purpose of this study was to assist in developing a standard set of criteria on which to base pricing decisions. This study estimated client ability to pay and then compared APROFE clinic prices with ability to pay. Only about 20% of clients are at or below the poverty line. Prices for the first year of IUD use average less than one percent of annual household income, and prices for a typical series of gynecology treatments range from one and two percent of income. Existing prices appear easily affordable by most clients, but prices in individual clinics often do not correspond to client ability to pay. For example, some clinics with the highest client ability to pay charge some of the lowest relative prices in the system. The study recommended grouping clinics into three or four clusters based on client ability to pay and charging uniform prices within each cluster.

I. INTRODUCTION

During a period when not-for-profit reproductive health agencies must become more sustainable, a key problem is to set prices high enough to avoid needless subsidies to wealthy clients while avoiding setting prices so high that access is denied to the poor. There are two basic approaches to this problem, (1) to submit clients to means testing, and then to apply a sliding fee scale, or (2) to tailor prices in individual clinics specifically to the ability to pay of the clients served by each clinic. The first alternative, a single sliding scale, is unpopular in Latin America. It makes heavy administrative demands on the clinic and, many providers believe, encourages patients to understate their ability to pay so that they may obtain lower prices. Tailoring prices to the client profiles of clinics is a more popular alternative. However, clinics left to set their own prices tend to use idiosyncratic and often impressionistic criteria in estimating ability to pay. The purpose of this study was to develop a uniform set of client ability to pay criteria for the clinics of The Asociacion Pro Bienestar De La Familia Ecuatoriana (APROFE), the largest private voluntary reproductive health organization in Ecuador.

Program Setting: APROFE operates a nationwide network of nineteen clinics, three-fourths of which are located in urban and one fourth in rural areas. APROFE is the International Planned Parenthood Affiliate (IPPF) in Ecuador. The organization is financed by a combination of users fees and donations from international organizations. Funds from its largest donor, The United States Agency for International Development (USAID) are expected to decline in coming years. APROFE plans to at least partially off-set these declines by increasing user fees and establishing profit-generating services. Before embarking on income generation efforts, APROFE needs objective information on the economic status of its clients. In the past each clinic set its own prices, based on its own philosophy and criteria.

Objectives: The specific objectives of this operations research project include:

1. To assess the economic status of APROFE clinic users
2. To evaluate the Affordability of current prices relative to client incomes
3. To determine how clients' ability to pay varies across APROFE's 19 clinics
4. To recommend pricing system alternatives

II. METHODOLOGY

Survey of Economic Status of APROFE clients: Three basic approaches can be used to the study of economic status of individuals. First, it is possible to focus on income which differentiates individuals by purchasing power. However, self-reported income is not always a reliable indicator or economic status (Levine, et al. 1992). In the subsidized clinic setting clients may deliberately underestimate income, or may not have accurate information about the incomes of other household members. These problems would tend to bias income downward, leading us to conclude that household income estimates probably define a lower bound of the true economic status of clients. To compensate for the problems associated with income estimates, we also obtained information on ownership of durable goods and consumption habits as alternative

measures of wealth. In addition to income questions, clients visiting APROFE clinics were asked about ownership of durable goods, and household consumption patterns such as use of private medical services, private schools, and frequency of eating meat. Data on the control of discretionary income by the client was obtained by questions on whether or not she had paid work, and frequency of and expenditures on beauty parlor visits. Demographic characteristics included client age, education, and living children.

A questionnaire was administered to a sample of clients visiting APROFE clinics during the months of January and early February, 1996. Every client coming to the clinic was interviewed until a total of 400 cases was obtained or four weeks had passed, whichever came first. In the largest clinics, interviewing was completed in a matter of days. In smaller facilities interviewing went on for an entire month.

Affordability of APROFE services: Affordability is the relationship between the price of a good or service and the resources available to the person purchasing it. Each clinic provided a list of prices for services and products offered. This information was used to calculate prices of the three most commonly used clinical services. (1) an IUD insertion consisting of both the visit and device charge, (2) the price of a year of IUD use (including the first visit, the method and a mean of 1.74 follow-up visits), and (3) the price of a typical course of gynecological treatment including three clinic visits and laboratory tests.

Affordability of APROFE services was assessed by dividing index prices by annual client household income. Affordability varies within clinics because clients at different income levels all pay the same prices. To capture some of this variation, we compared price/income ratios for clients at the 20th percentile, the 50th, and the 80th percentile of the income distribution in each clinic.

Variation in Ability to Pay across clinics: Two alternative approaches may be used to set prices based on client ability to pay. Each individual clinic may set its own prices based on the ability to pay of its own clients. Alternatively, it is possible to group the individual clinics into a smaller number of clusters, each with a homogenous client ability to pay profile. There are administrative and marketing advantages to the latter approach. The financial system deals with a smaller number of prices and a single price is charged to all individuals within the same market segment. To permit APROFE to choose between individual clinic and group price setting we performed a hierarchical cluster analysis, a technique designed to create groups with minimum variation among members but with maximum differences between groups in terms of client economic status. Variables for each clinic entered into this analysis represent two ability to pay factors. The first is overall household income and wealth, represented by mean total family income, percent of clients who own a motor vehicle, and percent of clients who own a refrigerator. The second factor is client's control over disposable income, represented by two variables, percent of clients with paid employment and mean visits to a beauty parlor in the last twelve months.

III. RESULTS

Client Survey: A total of 7575 clients were interviewed, a median of 401 per clinic (range = 382 - 409). Client data were not weighted for clinic size. Overall, visits to the clinics were divided equally (50.4% vs. 49.6%) between family planning and non-family planning services. IUD related visits were the most common family planning visits (37% of all visits) and gynecology and pap tests (30% of all visits) were the most common non-family planning visits.

Demographic Characteristics: There were only minor differences between clinics in most client demographic characteristics. Mean client age was 28.8 years (clinic range = 27.3 - 29.8) Over 95% of women were married or in union and over 90% had one or more living children. For all clinics, respondents had a mean of 2.2 living children (clinic range = 1.6 - 2.7). Client education was somewhat less homogenous than other demographic variables. Clients reporting no more than a primary education ranged from a low of 10% to a high of 57%, depending on the clinic. In contrast, clients reporting more than a secondary education ranged from a low of 7% to a high of 44%.

Economic Characteristics: Income and possession of consumer durables are our indicators of family purchasing power and wealth. Table 1 shows the medians and ranges for total family income, TV, refrigerator and motor vehicle ownership. The figures in table 1 represent clinics rather than individuals. Income information was collected in Sucres which were converted to dollars at the average January, 1996 exchange rate of S/2922 - $1.

Table 1
Indicators of Wealth and Purchasing
Power of APROFE Clinic Clients

Variable	Median Clinic	Range
Total Family Income	$1896, (USD)	$900 - $2464 (USD)
TV ownership	91%	82% - 99%
Refrigerator ownership	62%	41% - 84%
Motor Vehicle ownership	13%	6% - 23%

Income figures are probably rough estimates as considerable heaping occurs at even millions of Ecuadorian Sucres (4,000,000, 6,000,000 etc.). However, the median reported family income of almost $1900 is above the Ecuador annual minimum salary of approximately $1300 which is widely regarded as the country's poverty line. In only one clinic were as many as 80% of clients below the poverty line, and in only 6 clinics were 50% percent at or below the poverty line. In most clinics, fewer than 25% of clients report poverty level annual incomes. Reported

household income, which we consider to represent the lower bound of actual income, suggests that most clients have modest but not poverty level incomes. This characterization is supported by the relatively high levels of refrigerator and motor vehicle ownership shown in table 1, and by additional data on household consumption patterns.

For urban clients, use of private medical services is an indicator of family wealth and also suggests willingness to spend money on health services. In the median clinic, 28% (range= 16% - 58%) of clients delivered their last child in a private medical facility or pre-paid social security hospital. Similarly, 28% of families with school age children report one or more children enrolled in private schools. In Ecuador, tuition in private schools is estimated to range between $600 - $2,400 per student, annually (De Vargas, 1994).

Meat consumption is a widely used proxy for wealth. Depending on the clinic, 30% - 84% of clients reported having eaten meat or fish on each of the last three days prior to the interview, while 0% - 14%, depending on the clinic, reported eating no meat or fish in the last three days. Monthly expenditure on meat and fish can be estimated from a recent study of food prices carried out by the Ecuadorian Ministry of Public Welfare (Pinto, 1994).[i] Families consuming meat at one meal daily, would spend approximately $37 per month on meat or fish. Families consuming meat or fish two out of every three days would spend approximately $25 per month and families consuming meat once every three days would spend about $12 per month.

We assume that women who have paid work and/or spend money on personal items have control over at least some disposable income which could be used to pay for reproductive health services. Between 10% - 53% of all APROFE clients have paid work and about 53% percent visited a beauty parlor at least once in the twelve months prior to the survey. Among women who visited a beauty parlor, the modal number of visits was two, and the mean cost per visit was $ 3.74(range $3.11 - $5.19).

Affordability of APROFE Services: This section examines the relationship between APROFE prices and client income. The first step was to determine the range of clinic prices for selected services including an IUD insertion, the price of the first year of IUD use and the price of a typical course of gynecological treatment including laboratory tests.[ii] Table 2 shows the median, and range of prices for each of these services. The IUD is the most commonly used method among APROFE clients, and gynecological treatments the most requested non-family planning services.

Table 2
Median and Range of Prices for Selected Services in
APROFE Clinics, January - February, 1996

Service	Median Price	Minimum Price	Maximum Price
IUD Insertion	$6.84	$3.42	$9.24
First Year IUD Use	$9.51	$5.80	$13.57
Gyn. Series	$25.91	$10.70	$26.68

For each clinic, Table 3 expresses clinic prices for an for IUD insertion as a percent of monthly household income. Monthly income was selected because an insertion represents an up-front cost which must be met by the client. To capture the variation of client ability to pay within individual clinics, table 3 shows the price of an insertion as a percent of monthly income at the 80th, 50th, and 20th percentiles of the client income distribution.

Table 3
Cost of IUD Insertion as Percent of Client Monthly Income
at Selected Points on the Income Distribution, by Clinic

		Cost IUD Insertion		
Clinic No.	Clinic	20th	50th	80th
1	Piloto Guay.	6.52%	5.00%	3.00%
2	Alborado	4.67%	2.80%	1.40%
3	40 y La B	8.50%	5.67%	4.86%
4	Mapasingue	3.33%	2.86%	2.08%
5	Milagro	4.82%	3.37%	2.25%
6	Daule	16.66%	11.10%	6.84%
7	La Libertad	9.99%	6.66%	5.00%
8	Portoviejo	9.60%	4.80%	2.82%
9	Manta	6.66%	4.00%	2.50%
10	Chone	11.00%	6.88%	3.67%
11	Babahoyo	11.34%	8.50%	4.25%
12	Machala	8.33%	5.71%	4.00%
13	Santa Rosa	6.78%	4.75%	3.17%
14	Piloto Quito	3.43%	2.40%	1.50%
15	Solanda	3.00%	2.00%	1.20%
16	Cuenca	5.67%	3.78%	2.62%
17	Ambato	10.90%	6.00%	3.43%
18	Loja	9.00%	5.40%	3.37%
19	La Troncal	5.00%	4.00%	2.50%

For the wealthiest 20% of clients, the price of an IUD insertion ranges from approximately 1% - 7% of monthly income, depending on the clinic. In seventeen of APROFE's 19 clinics, the price of an insertion is less than 5% of monthly household income. For the poorest 20% of clients an insertion represents 3% - 17% of monthly income. In five clinics the poorest clients pay 10% or more of their monthly income for an insertion. Prices for clients at the 50th percentile of the income distribution, an insertion equals 2 - 11% of monthly income. In 9 clinics the average client pays 5% of a month's income or more, for an IUD.

Although modest relative to income, clinic prices are not closely matched to client ability to pay. Clients of the Daule clinic are the poorest in the APROFE system, yet the IUD insertion price of $6.84 is one of the highest in the system, representing almost 17% of the average client's monthly income. In contrast, clients at the Solanda clinic have the highest incomes in the system, but enjoy the second lowest insertion price ($4.11), paying an average of only 2% of monthly income for an insertion.

Table 4 shows the cost of the first year of IUD use by clinic as a percent of client income at different points on the income distribution, Table 5 shows the same information for a gynecological series. The cost of one year of IUD use and a gynecological series are shown as a percent of annual household income because the client incurs the costs over several visits.

Table 4

		Cost 1 Year IUD		
Clinic No.	**Clinic**	**20th**	**50th**	**80th**
1	Piloto Guay.	0.80%	0.61%	0.37%
2	Alborado	0.58%	0.35%	0.17%
3	40 y La B	1.22%	0.81%	0.70%
4	Mapasingue	0.47%	0.40%	0.29%
5	Milagro	0.58%	0.41%	0.27%
6	Daule	1.87%	1.25%	0.77%
7	La Libertad	1.34%	0.89%	0.67%
8	Portoviejo	1.32%	0.66%	0.39%
9	Manta	0.84%	0.51%	0.32%
10	Chone	1.57%	0.98%	0.52%
11	Babahoyo	1.33%	1.00%	0.50%
12	Machala	1.06%	0.72%	0.51%
13	Santa Rosa	0.83%	0.58%	0.39%
14	Piloto Quito	0.50%	0.35%	0.22%
15	Solanda	0.43%	0.29%	0.17%
16	Cuenca	0.72%	0.48%	0.33%
17	Ambato	1.30%	0.72%	0.41%
18	Loja	1.09%	0.65%	0.41%
19	La Troncal	0.66%	0.53%	0.33%

Cost of 1 Year IUD as Percent of Client Annual Income
at Selected Points on the Income Distribution

Table 5
Cost of 1 Year GYN as Percent of Client Annual Income
at Selected Points on the Income Distribution

		Cost 1 Year Gyn		
Clinic No.	**Clinic**	**20th**	**50th**	**80th**
1	Piloto Guay.	2.57%	1.97%	1.18%
2	Alborado	2.10%	1.26%	0.63%
3	40 y La B	2.68%	1.79%	1.53%
4	Mapasingue	1.98%	1.70%	1.24%
5	Milagro	2.48%	1.73%	1.16%
6	Daule	2.17%	1.45%	0.89%
7	La Libertad	3.01%	2.00%	1.50%
8	Portoviejo	2.79%	1.40%	0.82%
9	Manta	2.00%	1.20%	0.75%
10	Chone	2.69%	1.68%	0.90%
11	Babahoyo	3.84%	2.88%	1.44%
12	Machala	1.47%	1.01%	0.70%
13	Santa Rosa	2.03%	1.42%	0.95%
14	Piloto Quito	0.79%	0.56%	0.35%
15	Solanda	1.77%	1.18%	0.71%
16	Cuenca	1.72%	1.15%	0.80%
17	Ambato	2.87%	1.58%	0.90%
18	Loja	2.03%	1.22%	0.76%
19	La Troncal	1.61%	1.29%	0.81%

In all clinics, the first year of IUD use is approximately 1% of annual income and a gynecological series ranges from less than 1% to less than 4% of annual income, for even the poorest clients. Given these figures, it is not surprising that 89% of surveyed clients characterized APROFE prices as “reasonable” or “low,” while only 11% considered them “high.” The average price of an IUD insertion is less than the average expenditure on two beauty parlor visits ($6.84 vs. $7.48); and a series of gynecological treatments costs less than the monthly expenditures ($25 - $37) most clients make on meat. Finally, The International Bank for Reconstruction and Development (1993) estimates that Ecuadoreans spend 5% of annual income on medical care. As can be seen in the tables, neither a year of IUD use nor a gynecological series exceeds 5% of annual income for even the poorest clients.

Clinic profiles of client ability to pay: The final objective of the analysis was to reduce the 19 individual APROFE clinics into smaller groups on the basis of the five ability to pay variables (monthly household income, client’s paid work, ownership of a refrigerator, motor vehicle, and beauty parlor visits). Clustering reduces the administrative problems associated with individual clinic price setting, while still permitting a close correspondence between clinic prices and client ability to pay. The agglomerative method used in the cluster analysis starts with each clinic in its own cluster, and then groups clinics into ever larger clusters until all clinics are in one cluster. Four, three and two cluster solutions are shown in table 6 below. Table 7 shows the values of the variables used in the analysis by cluster

Table 6
Clinics Arranged by Cluster

	CLUSTER 1	**CLUSTER 2**	**CLUSTER 3**	**CLUSTER 4**
4 CLUSTER SOLUTION	2.La Alborada 1.Piloto Quito 17.Ambato	1.Piloto Guay. 8.Portoviejo 9.Manta 15.Solanda 16.Cuenca 18.Loja	3.40 y la B 4.Mapasingue 5.Milagro 7.La Libertad 10.Chone 11.Babahoyo 12.Machala 13.Santa Rosa 19.La Troncal	6. Daule
3 CLUSTER SOLUTION	2.La Alborada 1.Piloto Quito 17.Ambato	1.Piloto Guay. 8.Portoviejo 9.Manta 15.Solanda 16.Cuenca 18.Loja 3.40 y la B 4.Mapasingue 5.Milagro 7.La Libertad 10.Chone 11.Babahoyo 12.Machala 13.Santa Rosa 19.La Troncal	6. Daule	
2 CLUSTER SOLUTION	Same as above plus 6.Daule	Same as above		

Table 7
Ranges of Ability to Pay Variables by Cluster

CLUSTER	NO. OF CLINICS	MONTHLY FAMILY INCOME*	% WITH CAR	% WITH REFRIG.	% CLIENTS WHO WORK	MEAN BEAUTY VISITS
Cluster 1	3	171-226	13-23	47-84	50-53	2.2-4.3
Cluster 2	6	124-237	13-20	61-72	25-35	1.8-2.9
cluster 3	9	90-163	6-10	43-71	24-32	0.9-2.4
cluster 4	1	75	6	41	10	2.70

* 1996 US Dollars

Four Cluster Solution: Clusters one and two overlap in terms of monthly income and possession of consumer durables. The major distinction between the two is that many more women work in cluster one than in cluster two, and make slightly more beauty parlor visits, suggesting that cluster one clients have more control over disposable income than cluster two clients. Cluster three is distinguished from cluster four by greater income. Cluster four (the Daule clinic) clients, have less income and fewer women work for wages than any other clinic in the APROFE system.

Three and two cluster solutions: In the three cluster solution, clusters two and three are joined, producing a single cluster with a fairly wide range of family and disposable income. Cluster one remains unjoined because more clients work, and cluster four remains unjoined because of its overall poverty In the two cluster solution, clusters two, three and four are joined producing a single cluster with a very broad range of family and disposable income. Cluster one remains separate.

IV. DISCUSSION AND RECOMMENDATIONS

The purpose of this study was to evaluate the economic status of APROFE clients so that program managers would have a better idea of client ability to pay before increasing fees for services or intensifying other income generating activities. We conclude that most APROFE clients have modest incomes but are not poverty stricken. Results suggest that in most clinics only about 25% of clients are at or below the poverty line. In only one clinic, Daule, are 80% of clients at or below poverty. On the other hand, the clinics of La Alborada, Quito, Ambato and Solanda appear to serve a mainly middle class clientele. APROFE prices are also modest, but

not always well matched to client's ability to pay. Some clinics with mainly high income clients charge very low prices, while other clinics with low income clients charge high prices.

Clinics with higher income clients appear divided into two clusters, based on client's work status. Clients in the La Alborada, Quito and Ambato clinics are more likely to have direct control over income than are women in other clinics where household income is similar. We conclude that most clients in clusters one and two receive needless subsidies. In these two clusters, a series of gynecological treatments costs only about 1% of the average clients' annual household income while the first year of IUD use costs less than 1%. In the poorest cluster, (Daule) clients pay 1.25% of household income for the first year of IUD use and 1.45% for a gynecological series.

Program recommendations:

- Prices should be raised in all cluster one and two clinics and probably in some cluster three clinics, such as La Troncal, Machala and Santa Rosa.

- If APROFE opts for setting uniform fees within clusters of clinics whose clients have similar ability to pay characteristics, the organization should consider the four and three cluster solutions presented above. The four cluster solution distinguishes clinics at both ends of the income distribution as well as in the middle of the distribution, allowing fine tuning of prices to ability to pay. The three cluster solution does not distinguish between clinics at the middle of the ability to pay distribution but does preserve distinctions at the extreme. The two cluster solution should be rejected because it clusters Daule with wealthier clinics. A single price for such a large number of clinics with different client characteristics would almost certainly either needlessly subsidize wealthier clients or deny services to poorer clients.

- Some clinics like Daule charge as much as 11% of a typical client's monthly income for an IUD insertion while others like Solanda as little as 2%. Does this imply that many women are denied access to the Daule clinic because of high price, or that women in Solanda unnecessarily subsidized? Would more clients come to the Daule clinic if the price was reduced to 2%? Would fewer come to Solanda if the price were increased to 11%? APROFE should routinely monitor changes in demand for services and in client economic characteristics whenever they increase or decrease prices.

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ENDNOTES

1. The price of a single portion of meat ranges from $0.32 for fish to $0.25 for chicken. Multiplying an average price per serving of $0.29 by the average family size of APROFE households (4.2 persons) by the number of days meat is consumed during a month yields an estimate of average monthly expenditures on meat.

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2. The most common lab tests associated with gynecological visits include pap tests, Biometria Hematica, urine, coproparasite and vaginal secretions examinations at the rate of 23 pap tests and 27 laboratory panels per 100 gynecological visits. Therefore the factor added on to the cost of each gynecological visit was calculated as .23 * pap cost + .27 * lab panel cost.

Appendix 1
Client Income at Selected Points
on the Income Distribution

		Annual Income		
Clinic No.	**Clinic**	**20th**	**50th**	**80th**
1	Piloto Guay.	$ 945	$ 1,232	$ 2,053
2	Alborado	$ 1,232	$ 2,053	$ 4,107
3	40 y La B	$ 821	$ 1,232	$ 1,437
4	Mapasingue	$ 1,232	$ 1,437	$ 1,971
5	Milagro	$ 1,150	$ 1,643	$ 2,465
6	Daule	$ 493	$ 739	$ 1,199
7	La Libertad	$ 821	$ 1,232	$ 1,643
8	Portoviejo	$ 1,027	$ 2,053	$ 3,491
9	Manta	$ 1,232	$ 2,053	$ 3,285
10	Chone	$ 821	$ 1,314	$ 2,464
11	Babahoyo	$ 616	$ 821	$ 1,643
12	Machala	$ 986	$ 1,437	$ 2,053
13	Santa Rosa	$ 1,150	$ 1,643	$ 2,464
14	Piloto Quito	$ 1,437	$ 2,053	$ 3,285
15	Solanda	$ 1,643	$ 2,464	$ 4,107
16	Cuenca	$ 1,232	$ 1,848	$ 2,669
17	Ambato	$ 903	$ 1,643	$ 2,875
18	Loja	$ 1,232	$ 2,053	$ 3,285
19	La Troncal	$ 986	$ 1,232	$ 1,971